STATE COLLEGE OF WASHINGTON
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EXTENSION SERVICE
S. B. NELSON, Director

APPLE ANTHRACNOSE
OR
BLACK SPOT CANKER

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Fig. 2—Apple showing numerous rotted areas due to the apple anthracnose.

BY
F. D. Heald, Department of Plant Pathology Agricultural College and Experiment Station

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This disease which is also designated as Pacific Coast canker or Ogeron canker, manifests itself as a **twig and branch canker** on the apple, pear and quince, and as a **storage rot** on the fruits of these hosts.

Distribution—This disease is known to occur on the Pacific Coast west of the Cascade Mountains in Oregon, Washington and British Columbia, and has more recently been reported from the south central parts of Washington in Klickitat county. We have also a single record of the disease in Spokane county, but with these two exceptions the anthracnose is absent from Washington in the regions east of the Cascades. This disease is frequently the matter of inquiry by orchardists in the eastern and central parts of the state, who have confused cankers due to winter injury with the true anthracnose.

Symptoms and Effects — The cankers appear as dark colored, sunken, roughened or corroded areas, or open wounds in the bark of the younger growth. The lesions are generally most numerous and injurious on branches under two or three inches in diameter, only occasionally being found on the thick part of the larger branches. Frequently several of the cankers may coalesce and girdle a branch, or even the trunk of young trees. Young trees or branches affected in this way are killed.

Young cankers first appear in the fall, usually about the first of November, and are then noticeable on smooth bark as small circular spots, reddish brown to almost black in color. Beneath these spots a water-soaked appearance is noticed, which extends to the cambium layer. During the winter months the development of the cankers is very slow or may be completely checked, but with renewed activity of the host in the spring, they enlarge rapidly and reach their final size by early summer. As the spots enlarge they become elliptical in shape, more or less depressed, and by the time they reach mature size the bark dries and cracks slightly around the advancing edge. (Fig. 1.) In the earlier development the affected bark remains smooth but by the last of June, or a little later, small elevations or pustules more or less conical in shape, appear in the cankered areas. Later, about mid-summer, these pustules crack open and expose the spore-bearing masses of fungus tissue. In the late autumn the cankered area is separated from the healthy tissue by a slight ridge due to the formation of the callus. When the cankers become old, usually the second year, the bark cracks away from the edges, becomes loose and may drop out, leaving unsightly scars.

As previously stated, the disease is known to cause a storage rot of the fruit. It first appears on the surface as small, light brown, circular spots of rotting tissue. Young spots may show pale green centers surrounded by a zone of brown and have for this reason sometimes been designated as "frog-eye spots." These spots generally enlarge and later change to a very dark brown or black, eventually becoming dry, depressed and rather tough. One to many spots may appear on a single fruit, but the fruit in any case is finally completely

rotted. (Fig. 2.) Pustules similar to those formed in the cankers soon develop, quite commonly making their appearance in concentric circles.

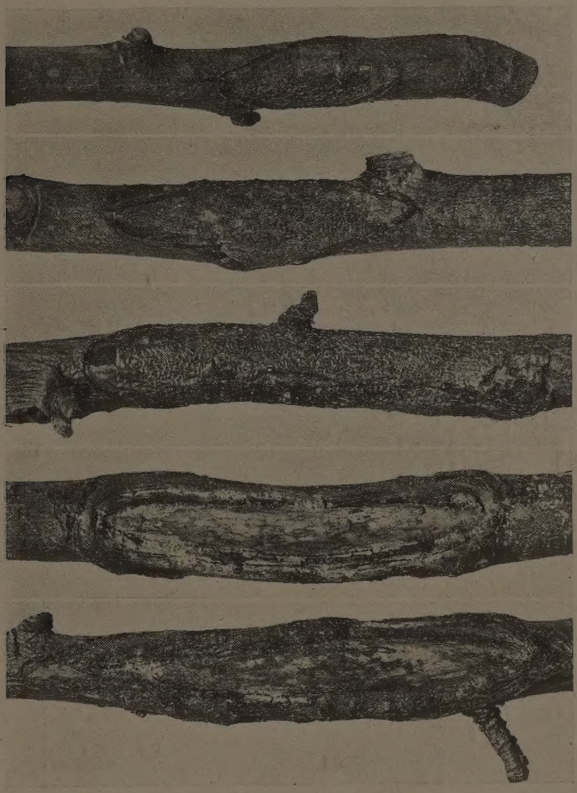

Fig 1—Apple anthracnose or black spot canker. Three mature lesions and two old cankers, showing callus formation.

Cause—Anthracnose is caused by a parasitic fungus known as **Neofabraea malicorticis.** It produces two kinds of spores or reproductive bodies. The summer spores, or conidia, are formed during the first year of the development of the canker. They are mature by late summer or fall and are ejected in a gelatinous mass from each of the small pustules found on the cankers. These spores are readily separated by rain or dew. On being liberated they are scattered by various agencies and each one is capable of producing a new infection.

The winter spores, or ascospores, are developed the second year, within small, club-shaped structures borne in minute disk-like bodies

that occupy the position of the pustules of the previous season. Following the fall rains these spores are discharged with force and are carried away by the wind. Like the conidia, upon germination, they are capable of producing new infections.

It has been found that conidiospores are also developed from old layers around the edges of the pustules producing the ascospores stage and also in the bark of cankers three years old. If the bark drops to the ground at the end of the first year, the winter spores may be developed in such bark on the ground.

Prevention and Control—Thorough spraying and pruning are essential in order to control the disease. The new infections take place only in the fall, generally with the beginning of the first fall rains. At this time conidia or summer spores are being set free from the one-year-old cankers while the winter or ascospores are being ejected from the two-year-old cankers. If the storage-rot stage of the disease has been serious, the orchard should be sprayed between September 1-20 (if rains occur spraying should begin during last of August), with either Burgundy mixture 1-30 or Bordeaux 3-4-50*. The former is perhaps preferable since it is a colorless fungicide and will not cause a staining of the fruit. If the storage-rot phase of the disease is not a factor this spraying may be omitted. For the prevention of the cankers, the orchard should be sprayed immediately after the fruit is picked, as at this time the spores are most abundant and new infections are most likely to take place. The 6-6-50 Bordeaux is recommended for this spraying and if the fall rains begin early and the trees are harboring old cankers, an additional spraying about three weeks after the first is advisable.

Too much emphasis cannot be placed on thorough pruning. It is advisable where possible to do this before the first spraying. Small twigs and branches showing cankers should be removed. Old cankers on large branches should be cut out so as to remove all dead bark, since they are the sources of abundant spore production. The wounds made in this cutting-out work should be protected in order to keep out wood-rotting fungi and insect pests. The entire cut surface should be painted with either coal tar or asphaltum paint (asphaltum in gasoline). If the grower wishes an even better protection the cut edges of the bark and cambium should be painted with shellac, and as soon as this dries the entire surface disinfected with a strong bluestone solution or formaldehyde, one part to nine parts of water, and then water-proofed with asphaltum paint or coal tar. The prunings and all the bark removed from cankers should be burned.

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*See Ext. Bul. 41 for methods of preparation of Burgundy and Bordeaux Mixtures.